



# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P64031PC00		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA416
International application No PCT/NL2004/000502		International filing date (day/month/year) 12.07.2004	Priority date (day/month/year) 14.07.2003	
International Patent Classification (IPC) or national classification and IPC A01N3/02, A01N25/10				
Applicant NEDERLANDSE ORGANISATIE VOOR TOEGEPAST.....				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 3 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 807 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 13.05.2005		Date of completion of this report 18.10.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P. B. 5816 Patentplan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: +31 851 800 01 Fax: +31 70 340 - 3016		Authorized Officer: Lamers, W Telephone No. +31 70 340-3713 		

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/NL2004/000502

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**Box No. 1 Basis of the report**

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1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-15 as originally filed

**Claims, Numbers**

1-17 filed with telefax on 02.08.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☒ the claims, Nos. 18
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (specify):
  - ☐ any table(s) related to sequence listing (specify):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (specify):
  - ☐ any table(s) related to sequence listing (specify):
- \* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/NL2004/000502

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	7, 8, 10, 12, 13, 16
	No: Claims	1-6, 9, 11, 14, 15, 17
Inventive step (IS)	Yes: Claims	
	No: Claims	1-17
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/NL2004/000502

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

- D1: DATABASE WPI Section Ch, Week 200209 Derwent Publications Ltd., London, GB; Class A23, AN 2002-084483 XP002305175 & JP 2001 278937 A (MITSUI CHEM INC) 10 October 2001 (2001-10-10)
- D2: WO 99/55154 A (STAR TINUS WILLEM HENDRIK ; VONK HANS (NL)) 4 November 1999 (1999-11-04)
- D3: DATABASE WPI Section Ch, Week 198925 Derwent Publications Ltd., London, GB; Class A97, AN 1989-182747 XP002305176 & JP 01 121201 A (DAICEL CHEM IND LTD) 12 May 1989 (1989-05-12)
- D4: DATABASE WPI Section Ch, Week 199717 Derwent Publications Ltd., London, GB; Class G04, AN 1997-186861 XP002267063 & JP 09 047154 A (FUSHIMI SEISAKUSHO KK) 18 February 1997 (1997-02-18)
- D5: US-A-5 580 975 (TADA SUGURU) 3 December 1996 (1996-12-03)
- D6: US-A-5 315 782 (BARCLAY WILLIAM M ET AL) 31 May 1994 (1994-05-31)
- D7: GB-A-1 576 999 (CENTRE NAT EXPLOIT OCEANS) 15 October 1980 (1980-10-15)
- D8: US-A-4 985 061 (HUGHES JOHN) 15 January 1991 (1991-01-15)
- D9: DATABASE WPI Section PQ, Week 198607 Derwent Publications Ltd., London, GB; Class P27, AN 1986-046737 XP002287064 & SE 8 403 211 A (NILSSON-ENGEROTH B) 15 December 1985 (1985-12-15)
- D10: DATABASE WPI Section Ch, Week 198926 Derwent Publications Ltd., London, GB; Class A11, AN 1989-190487 XP002305177 & JP 01 130726 A (DAICEL CHEM IND LTD) 23 May 1989 (1989-05-23)
- D11: DATABASE WPI Section Ch, Week 200367 Derwent Publications Ltd., London, GB; Class A97, AN 2003-706328 XP002305178 & KR 2003 038 964 A (UNID CO LTD) 17 May 2003 (2003-05-17)
- D12: DATABASE CHEMABS [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; F.ESPOSITO ET AL.: "Water sorption in cellulose based hydrogels" XP002305174 retrieved from STN-INTERNATIONAL Database accession no. 124:263718

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/NL2004/000502

D13: EP-A-0 604 862 (ELCHROM LTD) 6 July 1994 (1994-07-06)

D14: WO-A-9615154 (The Procter & Gamble) (1996-05-23)

**V.a. Certain observations on the international application**

The term "from DP50" used in claim 4 is unclear and leaves the reader in doubt as to the meaning of the technical features to which it refers, thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT).

**V.b. Novelty**

The subject matter of claims 1-6, 9, 11, 14, 15, and 17 is not new (Art. 33(2) PCT):

Document D9, which is an abstract of a Swedish patent document discloses the use of aqueous gels for storing cut flowers. The original Swedish document mentions as gelling polymer i.a. crosslinked sodium carboxymethylcellulose (see page 3, paragr. 5) and also the addition of nutrients (see page 4, paragr. 3). With respect to D9 the subject matter of claims 1, 3-6, 9, 14 and 17 is not new (Art. 33(2) PCT).

Documents D10 - D14 all disclose charged crosslinked saccharide-based polymers, documents D10 and D11 describing i.a. crosslinked hydroxyalkyl cellulose modified by glycidyl trimethylammonium chloride (and their use as water absorbing gels), document D12 disclosing biodegradable hydrogels based on sodium carboxymethyl cellulose crosslinked with divinylsulfone, document D13 disclosing crosslinked polymers based on various polysaccharides and crosslinking agents (see D13: claims), and document D14 disclosing cationic polymers based on various crosslinked polysaccharides and various cationic modifiers (see D14: the whole document). With respect to documents D10 - D14 the subject matter of claims 1-6, 9, 11, 14 and 15 is not new (Art. 33(2) PCT). Attention is drawn to Chapter 12.05 of the PCT International Search and Preliminary Examination Guidelines as in force from March 25, 2004, saying that for determining novelty of the subject-matter of claims directed to a physical entity, non-distinctive characteristics of a particular intended use should be disregarded.

**V.c. Inventive Step**

As the subject matter of claims 1-6, 9, 11, 14, 15, and 17 is not new, it cannot involve an inventive step (Art. 33(3) PCT).

Furthermore the subject matter of all claims lacks inventive step for the following reasons: The use of aqueous gels (containing further active agents or not) for extending the life of cut flowers, which are based on various crosslinked, biodegradable polymers is known from documents D1, D2, D8 and D9, with D9 disclosing i.a. gels based on a polymer matrix comprising a crosslinked carbohydrate (see D1: abstracts), (see D2: page 1, lines 1-6; page 2, line 9 - page 3, line 33; page 4, lines 12-17; Page 5, line 14 - page 6, line 3; Page 8, lines 6-12), (see D8: col. 3, line 8 - col. 4, line 2; col. 6, lines 16-22; col. 10, lines 23-42). Document D3 teaches the advantages of various poly-saccharides that have been modified by quaternary ammonium compounds like glycidyltrialkyl ammonium halide. The effect of such polymers as it is described in the present application, namely the protection of flower stems from bacteria, is already described in this document (see D3: abstracts). While the addition of certain active substances like biocides and/or growth promoters to gels for cut flower is known from documents D2, D4, D5, D8, and D9, the mechanism of release of these agents from the gels, as it is described in the present application is already known from document D7, teaching that biocidal agents are released from polymer based aqueous gels only in the presence of microbial organisms that liberate polymer degrading enzymes (see D7: page 2, lines 3-29 and line 65 to page 3, line 12). Furthermore and with respect to the subject matter of claim 16, envelopes containing biodegradable gels for cut flowers are already known from document D6 (see D6: the whole document).

As all the various features as disclosed and claimed in the present application have already been employed for the same purpose under mentioning of their advantages in the prior art, their combination would be no more than a normal design procedure and therefore obvious to the person skilled in the art (Chapter 13.14(c) of the PCT International Search and Preliminary Examination Guidelines as in force from March 25,

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/NL2004/000502

2004). Hence the subject matter of all claims lacks an inventive step (Art. 33(3) PCT).

**V.d. Industrial Applicability**

The subject matter of claims 1-17 appears to be industrially applicable (Art. 33(4) PCT).

## AMENDED SET OF CLAIMS

1. A care product for cut flowers comprising a polymer matrix which comprises a charged and crosslinked carbohydrate, wherein the matrix forms a gel in the presence of water, which gel immobilizes bacteria on the basis of electrostatic interactions between the gel and the bacteria.
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2. A product according to claim 1, wherein the carbohydrate is a positively charged and crosslinked carbohydrate.
3. A product according to claim 1 or 2, wherein the carbohydrate and
- 10 the gel to be formed are decomposable by microorganisms.
4. A product according to claim 3, wherein the carbohydrate is a carbohydrate from DP50.
- 15 5. A product according to any one of claims 1-4, wherein the carbohydrate comprises glucose, fructose, sucrose, maltose, arabinose, mannose, galactose, lactose or oligomers and polymers of these sugars, dextrins, agarose, amylose, amylopectine or gum.
- 20 6. A product according to any one of claims 1-5, wherein the matrix further comprises one active substance, and wherein the gel, when it is being decomposed by the microorganisms, releases the active substance to the environment.
- 25 7. A product according to claim 6, comprising at least two active substances.



8. A product according to claim 7, comprising at least one antimicrobial substance and at least one growth promoter.
9. A product according to any one of claims 1-8, which, in the presence of water, forms a transparent gel.
10. A product according to any one of claims 6-9, wherein the antimicrobial substance has the qualification "natural and/or foodgrade".
11. A product according to any one of claims 8-10, wherein the extent of release of the antimicrobial substance to the environment is related to the extent to which the gel formed in the presence of water is decomposed by the microorganisms present in the environment.
12. A product according to any one of claims 6-11, wherein the ratio between the amounts of polymer (A) and active substance (B) is 0.005-6.0 (A/B).
13. A product according to any one of claims 8-12, wherein the gel formed in the presence of water releases the active substance to the environment at a rate of 1-100 micromoles/day.
14. A gel obtained by contacting the care product for cut flowers according to any one of claims 1-13 with a limited amount of water.
15. A gel according to claim 14, wherein the ratio between the amounts of matrix (A) and water (B) is 0.001-3 (A/B).
16. An envelope containing a particular amount of the care product for cut flowers or gel according to any one of claims 1-15.

3

17. Use of the care product or gel according to any one of claims 1-15 for extending the vase life of cut flowers.

5